

Analysis of Central Valley Project Operational Alternatives

Prepared for

The Bureau of Reclamation

and

The Western Area Power Administration

Prepared by

Navigant Consulting, Inc.

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INTRODUCTION AND ASSUMPTIONS

INTRODUCTION

The Central Valley Project (CVP or Project) is a federally managed multi-purpose project consisting of an interconnected system of dams, reservoirs, generation facilities, transmission facilities, and pumping facilities providing water, recreation, electricity and resource management for California. Electric generation is produced at Bureau of Reclamation (Reclamation) facilities, and the Western Area Power Administration (Western) manages the transmission system along with the marketing of CVP power. CVP power is first provided to meet CVP water pumping and conveyance requirements. Power in excess of those needs is provided to Preference Customers, including municipal utilities, federal and state agencies, water districts and other qualifying electric customers. In addition to the marketing of CVP power to Preference Customers, power is dedicated to support the necessary water pumping requirements as well as the overall facility operation of Project Use Loads to ensure delivery of water to the Project's water customers.

For the last several decades, the CVP electrical facilities have been operated under a coordination agreement with the Pacific Gas and Electric Company (PG&E) generally referred to as Contract -2948A. In addition to Contract -2948A, PG&E and Western also operate under a number of other agreements that provide resource support, transmission, and other related services. Contract -2948A generally provides for exchange of energy between Western and PG&E and transmission related services. This agreement is scheduled to terminate on December 31, 2004. The termination of Contract -2948A will require, among other things, that Western and Reclamation consider replacement alternatives for the management of CVP power operations previously provided by PG&E.

To assist in the evaluation of replacement alternatives, Reclamation and Western sponsored the development of a 15-year relative cost comparison of several basic alternatives for possible future operation of the CVP system. The relative cost comparison considered four basic alternatives for the operation of CVP facilities:

- 1. Operate as a Participating Transmission Owner (PTO) in the California Independent System Operator (CAISO) under the CAISO tariff and protocols;
- 2. Operate under the CAISO tariff and protocols as a "Wheeling" customer of PG&E and the CAISO;



- 3. Operate under the CAISO tariff and protocols as a "Metered Subsystem" (MSS); and
- 4. Operate as a separate electric Federal Control Area (FCA) in California comprising all or portions of the CVP facilities and customers.

The goal of the cost comparison was to develop estimates of future costs and revenues for each of the defined alternatives, which could in turn be used to assist Reclamation and Western in contemplating decisions regarding which alternative to pursue for operation of the CVP system in the post-2004 timeframe.

GENERAL ASSUMPTIONS

Recognizing the overall complexity and host of scenarios that could be explored with the four CVP operational alternatives noted above, this analysis employed a set of general assumptions that served to set parameters on the analysis, and include the following:

- ➤ CVP operations would not fundamentally change with respect to water operations, including that electric operations would be managed around the water operations of the Project;
- ➤ The electric generation output and ancillary services available from the Project are based on previous studies of the CVP system, which estimated generation based on computer modeling runs and then matched these modeling runs to actual operations; and
- ➤ The Base Analysis assumes median water-year conditions (CVP generation output and Project Use load levels) for the full 15-year study period. Estimates were also calculated under a dry water-year and a wet water-year to determine the sensitivity of the results to various water-year conditions.
- ➤ The analysis represents a relative cost comparison of four specific alternatives for post 2004 CVP operations. The cost associated with the CAISO PTO alternative is used as a reference point in order to measure the relative cost impact of the other three CVP operational alternatives.
- This analysis examines existing rates and known costs in the current California marketplace. Presently, there are various proposals under consideration, as well as numerous regulatory proceedings that may impact the manner in which



existing costs may be applicable. This analysis does not attempt to predict the outcome of ongoing regulatory proceedings that may alter existing tariffs or corresponding rates.

➤ This analysis focuses on the cost implications associated with pursuing various alternatives for CVP operations. It does not attempt to provide analysis or account for the array of regulatory, legal, or policy-related matters that may be associated with each of the alternatives.

Although other assumptions are included in the analysis and noted elsewhere in the Report, these six general assumptions provide the overarching framework in which the analysis is conducted.



LOADS AND RESOURCES

In comparing the four options for post-2004 CVP operations, the analysis utilizes the same Load and Resource data for examining each of the alternatives. In general, overall Loads are represented by the combination of the CVP Project Use Load requirements and Western Customers' Base Resource allocation of CVP generation, and when applicable, accounting for the additional load requirements for Western's Full Load Service Customers (FLSC). Total Resources are represented by the combination of CVP generation, transmission capacity at the California-Oregon Transmission Project (COTP) and Pacific AC Intertie (PACI), and when necessary, custom product deliveries to meet the load requirements of Western's FLSC. Following is a more detailed discussion of the information relating to the Load and Resource information utilized in the analysis.

CVP CUSTOMER LOADS AND CUSTOMER GROUPINGS

Each of the alternatives for future CVP operations includes load figures for both the Variable Resource Customers (VRC) and Full Load Service Customers (FLSC). For the VRC, load levels are determined by applying the VRC Base Resource Percentage to CVP generation under median water-year conditions. For the FLSC, load levels are based on actual FY 2000 deliveries from Western (includes firming under Contract -2948A).

Under the FCA alternative, the analysis further separates Western Customers into four distinct categories in order to determine the sensitivity of costs and benefits associated with the formation of a FCA with the inclusion of specific Western Customers. The four Western Customer groups are categorized as follows:

- 1. Group A Project Use Loads
- 2. Group B Group A Loads, Redding, Roseville, and Shasta Lake
- 3. Group C Group A Loads, Group B Loads, Modesto, Turlock, and SMUD
- 4. Group D Group A Loads, Group B Loads, Group C Loads, First Preference Loads, and all Other Customer Loads

Project Use Loads include the power requirements to meet the overall operation of the CVP system and pumping needs to support the delivery of CVP water for irrigation purposes. The pumping requirements include loads at the O'Neil, Dos Amigos, Delta, and the Tracy Pumping Stations. Under the median water-year conditions, the total load for these facilities is approximately 1,040,000 MWh.



CVP RESOURCES

Each of the alternatives for CVP operations includes estimates for resources available from CVP facilities. Resources are used to meet the Western Customer Load requirements, both for the VRC and FLSC, as well as for Project Use Load requirements. CVP resources include:

- 1. CVP Generation
- 2. PACI Transmission Capacity
- 3. COTP Transmission Capacity
- 4. Custom Product

Generation levels from CVP facilities are based on the applicable system output for the specific water-year conditions. For the Base Analysis, median water-year conditions, CVP generation output is approximately 4,600,000 MWh. Transmission entitlements on the PACI (400 MW) and COTP (177 MW) assume that Western's existing transmission arrangements continue over the 15-year forecast period. A utilization factor of approximately 50 percent is assumed on the transmission facilities to determine the level of imports from the Pacific Northwest.

Recognizing that the analysis focuses on post-2004 operations, customer requests or commitments for additional resource support (i.e. Custom Product) from Western remain unknown at this point. For the purposes of this analysis, it is assumed that Western's FLSC, which include many of Western's small customers, need resources to meet their entire load requirements (actual load levels based on actual FY 2000 information). Therefore, a Custom Product resource component has been included in this analysis to meet the requirements for the FLSC for the loads greater than their Base Resource Allocation. With regard to this Custom Product component of the analysis, it is important to note that although this analysis does not attempt to estimate the energy or procurement costs associated with Western purchasing a Custom Product, it does provide an estimate of costs associated with the delivery of Custom Product to meet the loads of the FLSC under each of the four alternatives.

ANCILLARY SERVICES

In addition to the generation and transmission resources available from CVP facilities and applicable Custom Product deliveries, the analysis also takes into consideration the availability and provision of ancillary services from CVP facilities. Specific ancillary services accounted for in the analysis include:

Spinning Reserve



- ➤ Non-Spinning Reserve
- ➤ Regulation

Ancillary services available for the CVP facilities are based on figures developed in a previous study to determine operational alternatives for the CVP. For the purposes of this analysis, ancillary services are used first to meet the reserve requirements for project use loads; ancillary services in excess of those needs then used to meet the FCA, with reserves maintained that are sufficient to provide firm exports from the FCA to CVP customers in other control areas. Deficiencies in the self-provision of ancillary service from CVP facilities are made up by purchases from the marketplace. Surpluses in ancillary services are sold into the marketplace.



CVP OPERATIONAL ALTERNATIVES

Although this analysis examines four possible alternatives for the operation of the CVP system, an underlying component of the analysis pertains to control area operations, specifically which entity will serve as the control area operator for CVP resources, Western Customer loads, and Project Use Loads. This analysis considers two fundamental scenarios for control area operations:

- ➤ CAISO serves as the control area operator
- Western serves as the control area operator (Federal Control Area)

CAISO AS CONTROL AREA OPERATOR

Under the CAISO scenario, the CAISO serves as the control area operator for CVP loads and resources, providing services consistent with the protocols of the CAISO tariff. As a part of this analysis, this scenario includes three alternatives for the operation of the CVP system:

- Operate as a Participating Transmission Owner;
- Operate as a Wheeling Customer; or
- Operate as a Metered Subsystem (MSS).

Participating Transmission Owner (CAISO as Control Area Operator)

It is assumed that as a PTO in the CAISO, Reclamation and Western will execute a Transmission Control Agreement (or some form thereof) and a Participating Generator Agreement with the CAISO. The operation of the CVP generating facilities does not change substantially since CVP operations will remain guided by environmental factors and water operations. Transmission service associated with CVP resources to Western Customer Loads and Project Use Loads is provided over the CAISO controlled transmission system with all applicable charges applied to CVP deliveries. Charges include those applied by the CAISO related to CAISO operations, applicable market charges, and other tariff rates that are associated with transacting in the CAISO marketplace. In addition to the costs associated with the PTO alternative, this alternative includes a key benefit associated with the repayment of Western's Transmission Revenue Requirement through the CAISO Transmission Access Charge.

Wheeling Customer (CAISO as Control Area Operator)

As a Wheeling Customer in the CAISO control area, the overall operation of CVP facilities remains essentially unchanged. Under this alternative, Western and Reclamation do not turn over operational control of their facilities to the CAISO, as is the



case under the PTO alternative, nor is Western's Transmission Revenue Requirement recovered through the CAISO Transmission Access Charge. However, many of the same CAISO and other related market charges are effective, similar to the PTO alternative, but are applied to varying CVP deliveries to the extent that Western utilizes the CAISO controlled transmission system to deliver its resources and meet the requirements of its Customer Loads and Project Use Loads.

Metered Subsystem (CAISO as Control Area Operator)

Under the MSS alternative, it is assumed that Western and Reclamation would execute an MSS agreement with the CAISO, generally equivalent to that executed between the Northern California Power Agency and the CAISO. CAISO costs under this alternative would be very similar to those incurred under the Wheeling Customer alternative, with the exception of certain charges that are assumed to be exempt under an MSS agreement, including possibly avoiding deviation and neutrality charges applied by the CAISO.

Under each of these alternatives (PTO, Wheeling, and MSS) in which the CAISO serves as the control area operator, CVP customers with transmission facilities directly connected to the CVP system are analyzed together with other customers; however, applicable costs and revenues for the directly connected customers are calculated consistent with the CAISO tariff.

FEDERAL CONTROL AREA (WESTERN AS CONTROL AREA OPERATOR)

Under the Federal Control Area (FCA) alternative, it is assumed that Western will serve as a control area operator and be responsible for scheduling loads and resources for the entire FCA, as well as maintaining the necessary amount of reserves to ensure reliable operation of the FCA. For the purposes of this alternative, four basic customer groupings were examined to compare costs and revenues and examine the sensitivity of certain Western Customers participating in the FCA. These customer groups were discussed earlier in the Report and include Group A, Group B, Group C, and Group D. The specific customers included in each of these four Groups are identified in Appendix A. Under the FCA alternative, the Western Customers that are not directly connected to the CVP system, but are included in the control area, receive "load following" type service from the FCA across the CAISO controlled transmission facilities. Western Customers directly connected to the CVP system receive control area services from the FCA and do not use the CAISO controlled transmission facilities for the delivery of their Western Base Resource deliveries.



START-UP AND OPERATING COSTS

With the upcoming expiration of the long-term coordination agreements between PG&E and Western, and the implementation of its 2004 Power Marketing Plan, Western, in close coordination with Reclamation, has developed several sets of start-up and operating cost estimates associated with each of the four potential CVP operating structures considered in this analysis. The overall start-up and operating cost estimates for this analysis consider costs associated with the following items:

- ➤ Labor
- Software Acquisition and Development
- ➤ Capital Expenses for Restructuring Existing Operations to Operate in a CAISO Control Area,
- ➤ Capital Expenses associated with the Formation of a FCA.

The capital and operating expenses included in the control area alternatives reflect some costs for existing staff and personnel expenses which will be redirected from certain functional areas to work on necessary scheduling, dispatch, settlements and related functions as needed under the different alternatives. Although there are some additional staffing and new equipment requirements, a significant portion of the expenses represent costs that would also be incurred under the implementation of the 2004 Marketing Plan.

CAISO AS CONTROL AREA OPERATOR

The operating cost estimates for the alternatives in which the CAISO will continue to serve as the control area operator for CVP loads and resources reflect expenses for redirecting existing Western personnel to provide the necessary scheduling, settlements, dispatching, switching, and related services necessary to function as a PTO, Wheeling Customer, or MSS in the CAISO control area. Capital costs in which the CAISO serves as the control area operator also included software needs, such as scheduling, EMS and metering.

WESTERN AS CONTROL AREA OPERATOR

In the alternative in which Western forms a separate FCA and serves as the control area operator for CVP loads and resources, cost estimates are provided for similar items as identified above in which the CAISO serves as the control area operator, such as labor and equipment; however, the FCA alternatives scenario includes costs for additional personnel, labor and capital expenses.



Figure 1 provides a summary of the estimated start-up and operating expenses for the different CVP operational alternatives. Note that for the purpose of this analysis, the estimated start-up and operating costs associated with the Wheeling Customer and MSS alternatives are estimated to be equal.

Figure 1 Summary of Costs associated with CVP Operational Alternatives (\$000)

	Join CAISO as	Agreement with	Form Federal
	PTO	CAISO as	Control Area
		MSS/Wheeling	
Annual Operating Expenses	\$12,047	\$17,148	\$17,500
Annualized Capital Expenses			
IT Infrastructure Costs	\$2,605	\$2,605	\$2,908
Other Infrastructure Costs	\$221	\$221	\$316
Substation Costs		\$691	\$2,777
Subtotal	\$2,826	\$3,517	\$6,001
Total Capital & Operating			
Expenses	\$17,989	\$20,665	\$23,501
Other One-Time Expenses			
(Incurred in 2005 only)			
Metering			\$1,000
CVP Metering	\$1,300	\$1,300	\$930
Total	\$1,300	\$1,300	\$1,930
CAPITAL COSTS			
Information Technology	\$13,632	\$13,632	\$15,217
costs			
Other Infrastructure and	\$900	\$11,370	\$43,398
Substation costs			
Total	\$14,532	\$25,002	\$58,615



COST INPUTS AND ASSUMPTIONS

This section of the report outlines and discusses the cost inputs and assumptions used to examine the relative cost differences between each of the four CVP operational alternatives. In addition to the costs considerations, however, benefits attributable to each of operational alternatives are also taken into account.

It is important to note that the costs inputs used in this analysis are not only limited to the charges applied directly by the CAISO for its services in operating the transmission system, ancillary service markets, and real-time balancing of loads and resources, but also include other charges that are applicable through the CAISO for participating in the CAISO markets. Where applicable, the most recent CAISO and other tariff rates are used to generate cost estimates for each of the alternatives; however, the CAISO charges that are not CAISO or other filed tariff rates are estimates based on the average historical charges for the different categories of costs (e.g. Unaccounted for Energy and Neutrality). It is important to note that while there are many categories of costs and revenues that can accrue to CAISO market participants, this analysis focuses on the major categories of costs and revenues.

COST COMPONENTS

The following provides a description of the cost components used in the analysis. Also provided is a discussion of the applicability of the costs for the relevant CVP operational alternative:

A. Grid Management Charge (GMC)

The GMC is divided into three categories of charges based on the CAISO 2001 tariff filing:

- 1. Control Area Services
- 2. Interzonal Scheduling
- 3. Ancillary Services and Real Time Energy Operations

The GMC rates are the current rates under the 2002 GMC rate settlement. The Control Area Services (CAS) charge is assessed to total customer load within the CAISO control area and exports from the CAISO control area. This charge applies for load served under the PTO, Wheeling, and MSS scenarios. Wheeling through transactions from the FCA to Western customers in the FCA are not assessed the CAS charge. Delivery of energy and related services from CVP facilities for all scenarios except the CAISO scenario is treated as a wheeling transactions. Under the PTO scenario, the Interzonal Scheduling (IS) charge is assessed on all imports



based on PACI and COTP transmission entitlements. For transmission schedules across the PACI under the FCA, there are no IS charges applied. The Ancillary Services and Real Time Energy Operations (ASREO) charge is assessed based on the purchases of ancillary services in the CAISO marketplace. Self-provided ancillary services are not assessed the ASREO component of the GMC. Under the FCA scenario, the ASREO charge does not apply to FCA loads.

B. Transmission Service

Transmission service rates are based on the current Transmission Access Charge (TAC) for northern California. Under the each of the CVP operational alternatives, the TAC is applied to loads that use the CAISO controlled transmission system. With regard to transmission service, it is important to highlight an assumption that pertains to the costs potentially incurred by Western under the CAISO PTO alternative. The recently filed Amendment 49 proposes that new PTOs electing to participate in the CAISO would be held harmless, on an interim basis, with regard to their transmission service costs. This issue is the subject of litigation and any such compensation would end in 2010 and be further limited by Amendment 27 cost cap provisions. Consistent with overall assumptions previously highlighted in this Report, this analysis does not attempt to predict the possible outcome of pending regulatory proposals; rather it utilized known charges and effective tariffs for estimate costs. Hence, this analysis does not assume that Western will be held harmless with regard to its transmission service costs under the CAISO PTO alternative.

C. Ancillary Services

Ancillary Service costs are based on ancillary service requirements for the Western Customer Loads and Project Use Loads served by the CVP. Ancillary service requirements for loads in the CAISO control area are determined based on the CAISO ancillary service requirements as a percent of total load. Ancillary service requirements for loads in the FCA are based on a five percent operating reserve requirement and regulation equal to the level established for the CAISO control area. In the CAISO control area scenario, the operating reserve requirement is based on average historical requirements of approximately six percent. Projected ancillary service rates are based on historical ratios of ancillary service costs to forecast market energy rates.

The CVP system is used to self-provide ancillary services to the extent possible to meet Project Use Loads and Western Customer Loads consistent with the Post-2004 Implementation Plan; any excess after meeting project use and customer obligations is sold at market rates.



D. Transmission Congestion Charges

Transmission congestion charges are assessed based on congestion on CAISO controlled facilities. With the exception of the PTO scenario, no congestion charges are assessed based on the assumption that the PACI and the COTP will remain an Existing Transmission Contract with no congestion costs being passed through to CVP loads. In addition, it is assumed that the COTP is not part of the CAISO controlled transmission facilities except for the PTO scenario. Under the PTO scenario, congestion costs are based on average historical values for congestion on the California-Oregon Intertie interface.

E. Reliability Services

The Reliability Services (RS) costs reflect the fixed payment obligations and any contract-based variable expenses for the Reliability Must Run (RMR) units located in PG&E's service territory. The RMR rates are based on the PG&E 2002 Reliability Services Tariff rates. The PG&E RS Tariff rates for TO tariff customers are currently not in effect due to FERC's rejection of the PG&E tariff. However, it is expected that PG&E will refile the tariff. Accordingly, the most recent PG&E tariff rate filing was used for the purposes of this analysis. RS charges are applied to loads on the CAISO controlled transmission system. RS charges are also applied to the MSS schedules in spite of some uncertainty, based on contract language, about whether the MSS entities will be charged full RS charges. Under the FCA, RS charges are not applied to FCA loads.

F. Deviation Costs

Deviation charges are costs for imbalance energy from the CAISO market resulting from deviation from schedules. It is assumed that Western will be responsible primarily for generation deviations. The deviation is an estimate of average deviation for the hour over an annual period. The default deviation value is three percent. This analysis applies a surcharge on energy costs to reflect increased costs for real-time energy purchases to cover deviations. Deviation costs or charges are applied to loads under the Wheeling and PTO scenarios but are not assessed in the FCA or MSS scenarios.

G. Unaccounted for Energy

Unaccounted for Energy (UFE) is an adjustment surcharge applied to load to recover energy costs primarily due to metering and distribution losses. UFE is charged to customers scheduling across the CAISO controlled transmission system. MSS entities are not charged UFE because they are exempted from the charges. The UFE



rate is based on historical average UFE rates. UFE charges are assessed under the Wheeling and PTO scenarios, but not the MSS and not to FCA loads.

H. Neutrality Charge

This CAISO cost is a charge to ensure a balance in ISO costs and revenues. The neutrality charge recovers imbalances in costs due to CAISO cost allocation mechanisms. The charge is based on historical costs per MWh. Neutrality charges are assessed to all loads in the CAISO control area based on schedules on the CAISO controlled transmission grid.

I. Grid Operations Charge

The grid operations charge is a cost for congestion management within zones (Intrazonal congestion). The cost is applied to total loads on the CAISO controlled transmission grid.

J. Capital Costs

The capital costs are the annualized costs associated with each of the CVP operational alternatives. These costs are outlined and discussed previously in the Start-Up and Operating Cost section of the Report.

K. *Operating Expenses*

The operating expenses are the costs for staffing for each of the CVP operational alternatives. These costs are outlined and discussed previously in the Start-Up and Operating Cost section of the Report.

L. Transmission Revenue Requirement

The Transmission Revenue Requirement represents Western's existing costs associated with its transmission assets and includes the costs associated with the CVP system, the COTP, and PACI.

REVENUES

The following outlines and describes the benefits categories taken into account as a part of this analysis:

A. Ancillary Service Benefits

The Ancillary Service rates used in the cost analysis estimate the value of Ancillary Service sales into the marketplace. The amount of MW sold into the market is input based on the availability of excess Ancillary Service for sale into the market after meeting project use and customer Ancillary Service obligations.



B. Transmission Payments

These revenues reflect payments from the CAISO market through the TANC for use of CVP transmission facilities, which operational control has been turned over to the CAISO.

OTHER COSTS

The cost and revenue estimates do not include other unspecified costs or revenues that may accrue due to changes in the CAISO, TO tariffs or related sources of costs. In addition, the cost estimate does not include additional charges for the FCA to manage non-CVP loads and resources.



SUMMARY OF RESULTS

Table 1 and Table 2 summarize the annual benefits and costs associated with each alternative for 2005 and 2010, respectively. Table 3 provides a summary of the relative savings versus the CAISO PTO alternative for the same specific years for selected CVP operational alternatives. Appendix B contains the summary results for each alternative over the entire 15-year study period (2005 through 2019).

As identified in Table 1 and Table 2, the comparative analysis of costs for the CVP operational alternatives indicates that formation of the FCA can, under the assumptions of the study, lead to lower costs than the reference alternative of becoming a PTO under the CAISO. The results indicate a significant costs savings for all of the FCA alternatives (Group A through Group B) when compared to the CAISO PTO alternative. The primary drivers in the cost savings are the CAISO TAC and the RS costs. Under the CAISO PTO alternative, Western Customers pay transmission access charges on their gross load and are also expected to be charged for reliability services on a gross load basis. A significant portion of these charges is avoided by a Wheeling or MSS customer and by the formation of a FCA. The example results summarized in Tables 1 and 2 indicate annual savings ranging from nearly \$9.0 million to approximately \$24 million for 2005 and ranging from approximately \$13.2 million to \$31.5 million for 2010. These cost estimates do not include potential unknown future charges from the CAISO or for other control area services. However, it is not expected that these costs would offset the significant estimated savings.

Table 3 highlights the relative cost savings of selected CVP operational alternatives (MSS and FCA – Group B) as compared to the reference CAISO PTO alternative. The MSS alternative provides an estimated annual savings of approximately \$9.2 million in 2005 increasing to nearly \$13.2 million in 2010. The FCA alternative, with Group B Customers, provides an estimated annual savings of approximately \$9.7 million in 2005, increasing to nearly \$15 million in 2010.



APPENDIX A

CVP Operational Alternatives Summary of Customer Groups for Federal Control Area

Group A

Tracy O'Neil Dos Amigos Delta

Group B

Group A City of Redding City of Roseville City of Shasta Lake

Group C

Group A Group B

Turlock Irrigation District Modesto Irrigation District

Sacramento Municipal Utility District

Group D

Group A Group B Group C Alameda NDA Alameda Power & Tel

Avenal Biggs, Gridley, City of Healdsburg Lodi Lompoc Oakland, Port of

Palo Alto San Francisco City & County Silicon Valley Power,

Ukiah, Scheduled Arvin-Edison Banta-Carbona ID Broadview WD Byron-Bethany Cawelo WD

East Contra Costa Irr Dist East Contra Costa PD#3 Eastside Power Authority

Glenn-Colusa James ID

Lower Tule River ID Merced Irrigation District

Patterson WD Provident ID Rd 2035

San Juan Suburban Water Dist

Santa Clara Valley Sonoma County Westside ID West Stanislaus ID Westlands PP 6-1 Westlands WD Westlands Pp 7-1 Ames Reseach Center

Beale AFB
DOE Oakland
County of Sacramento
Moffet Federal Airfield
Naval Air Station Lemoore
Naval Air Station Dixon

Naval Public Works Cen, Concord Oakland Army Base

Onizuka AFB*
Parks Reserve Forces Tng Area
Sharpe Depot
Tracy Defence Depot

Tracy Defence De Travis AFB Travis Wherry

CA Medical Facility - Vacaville CA State Parks & Rec, Folsom

CA State Prison, Sac CSUS Nimbus Deuel Vocational Institute

NCA Youth Center UC Davis East Bay Mud Lassen Mud

Bart, Scheduled

Plumas-Sierra

Pittsburg Power Company

Sierra Conservation Center (First Pref.) Calaveras Public Power Agency (First Pref.) Tuolumne Public Power Agency (First Pref.)

Trinity County PUD (First Pref.)



APPENDIX B